

8. LOCAL ARTERIAL CORRIDORS

Boston is one of America's oldest cities. Many streets laid out by the puritans in the 1630s are still in use today. Several downtown streets follow old wharf lines that were filled in the 19th century as land values rose. Some straight thoroughfares like Blue Hill Avenue were built by investors as for-profit turnpikes. Together these travel ways bear witness to Boston's rich history.

Today the challenge of moving traffic in Boston is greater than ever. The streets, parkways, highways, bridges, and tunnels that make up Boston's infrastructure are owned by a number of state, local, and regional entities. In addition to City of Boston, the Massachusetts Highway Department, Massachusetts Turnpike Authority, Massachusetts Port Authority, and Metropolitan District Commission have ownership, jurisdiction, care or custody over many of Boston's traveled ways. The presence of multiple agencies with jurisdiction over Boston roadways presents challenges to coordinate and manage the transportation system.

Within this context, *Access Boston* seeks to develop operational and management improvements to arterial roadways that provide safe and efficient traffic flow and shift traffic from neighborhood residential streets to these corridors. These improvements will be integrated into proposed creation of transit priority corridors to strengthen the multimodal function of Boston's streets.

More effective use of Boston's existing and soon to be completed roadway infrastructure is key to improving traffic flow on local arterials. BTD will focus on the following:

- In a few years the Central Artery project will provide drivers with a state-of-the-art highway system. The diversion of regional traffic to the expanded capacity of the Central Artery will reduce pressure on local arterials serving the city's neighborhoods, such as Charlestown, East Boston, South Boston and the South End in addition to the downtown area.
- Boston's Traffic and Emergency Control Center is located in City Hall. Put into operation in the early 1980s, it is being upgraded. BTD is currently expanding the center's connections with signals and cameras with fiber optic cable to enhance real time traffic management. Information sharing with state agencies and their traffic control centers is already being phased in.



Local arterials must balance a variety of competing uses. Safe and efficient traffic flow on these corridors can keep traffic out of residential areas.

Table 20 – Average Weekday Daily Traffic Volumes for Selected Boston Arterials

CORRIDOR	NEIGHBORHOOD	OWNER	AWDT ¹
Rutherford Avenue	Charlestown	City of Boston	61,000
VFW Parkway	West Roxbury	Metropolitan District Commission	43,000
Gilmore Bridge	Charlestown	City of Boston	42,000
Boylston Street	Fenway/Longwood Medical Area	City of Boston	42,000
Jamaicaway	Jamaica Plain/Mission Hill	Metropolitan District Commission	41,000
Columbus Avenue	Roxbury	City of Boston	39,000
Morrissey Boulevard	Dorchester (North)	Metropolitan District Commission	39,000
Cambridge Street	Allston/Brighton	City of Boston	35,000
Morton Street	Mattapan	City of Boston	34,000
Dorchester Avenue	South Boston	City of Boston	34,000
Tremont Street	Roxbury	City of Boston	33,000
Melnea Cass Boulevard	Roxbury	City of Boston	32,000
Massachusetts Avenue	South End	City of Boston	32,000
Seaver Street	South End	City of Boston	30,000
Massachusetts Avenue	Back Bay/Beacon Hill	City of Boston	29,000
Congress Street	Downtown	City of Boston	28,000
Old Colony Avenue	South Boston	City of Boston	27,000
Cummins Highway	Mattapan	City of Boston	26,000
North Beacon Street	Allston/Brighton	City of Boston	26,000
Morrissey Boulevard	Dorchester (South)	City of Boston	26,000

Source: CTPS

Note: 1. Average weekday daily traffic volume.

Boston's Arterial Corridors

Six of Boston's historic neighborhoods had been separate cities before annexation between 1867 and 1912. The roads that connected their historic town centers to Boston and to each other are still major thoroughfares. Newer roads and highways were built as part of extensive landfill projects in the 18th and 19th centuries. In the 1950s and 1960s, new radial highways were built through the city as part of the Interstate highway system. These highways, the regional parkway system and local roadways parallel to the highways now carry the bulk of Boston's traffic.

Table 20 includes average weekday daily traffic volumes for selected Boston arterials. All of these corridors have AWDTs that exceed 25,000 vehicles per day. The City of Boston operates seventeen of the roadways, with three under the control of the Massachusetts District Commission.

Motorists use local arterials as alternatives to congested highways. These roadways are heavily traveled during peak commuting hours and when accidents on the highway system or other congestion-

related events cause traffic to seek alternative routes. Two of the three highest volumes occur in **Charlestown**, Rutherford Avenue and the Gilmore Bridge, that are used as parallel routes to I-93 and as access to Cambridge. Three other roadways in **Dorchester** (listed as four different roadway sections in Table 20) are part of a popular parallel route to I-93 south of downtown, including Dorchester Avenue, Old Colony Avenue and Morrissey Boulevard. In **Allston/Brighton**, Cambridge Street and North Beacon Street provide local access to I-90/Masspike.

Nine of the roadways are located in the **southwest section of the city**, which lacks direct highway access. These include the VFW Parkway, Boylston Street (Fenway/Longwood Medical Area), the Jamaicaaway, Columbus Avenue, Morton Street, Tremont Street (Roxbury), Melnea Cass Boulevard, Seaver Street and Cummins Highway. Two roadways (listed as three different roadway sections in Table 02) are used for **crosstown access** in or near the downtown, including Massachusetts Avenue and Congress Street.

BTD has begun a process to evaluate the performance of key arterials (see box on page 83). Figure 22 summarizes the results of these analyses.

BTD Traffic Signal System

BTD controls nearly 800 traffic signals as shown in Figure 23. To help manage the traffic signals, BTD operates a Traffic Management Center (TMC) in City Hall that controls 380 traffic signals, hundreds of loop detectors, and numerous video cameras. The TMC enables real-time traffic monitoring, management, and emergency response coordination. It also has access to images from the Central Artery cameras and shares information with the Turnpike Authority's Operation Control Center (OCC), which, with the completion of the Artery project, will monitor regional highways within Route 128. Variable message signs will also be managed through the OCC. The Massachusetts District Commission controls over 100 traffic signals in Boston, some being coordinated with the BTD's TMC.

The MBTA also operates an extensive Transit Operations Center. As more buses utilize Boston's surface streets, such as the Silver Line Bus Rapid Transit system, coordination between BTD and MBTA will be critical. The most recent state funding cycle includes monies to upgrade the City's TMC. The \$3.2 million project is jointly funded by the City of Boston, Massachusetts Highway Department, and with substantial support from the Federal CMAQ program. The project includes a new video wall, communication equipment, and computer and software upgrades.

Investment in technology that will enhance transportation security is a high priority for BTD. Connections to new signals, pan-tilt-zoom (PTZs) cameras at key intersections and new cable continue to be added to City infrastructure.

BTD has identified and is expanding its fiber optic network as shown in Figure 24. Fiber has already been installed along the Washington Street corridor, Hyde Park Avenue, Center Street (West Roxbury) and along Washington/Cambridge Streets in Allston/Brighton.

BTD's strategy to add and upgrade existing signals and complete the fiber optic network is through:

- All federal and state funded street reconstruction projects
- Enhanced coordination with state agency systems
- Coordinated mitigation programs involving new development projects.

ARTERIAL CORRIDOR EVALUATION

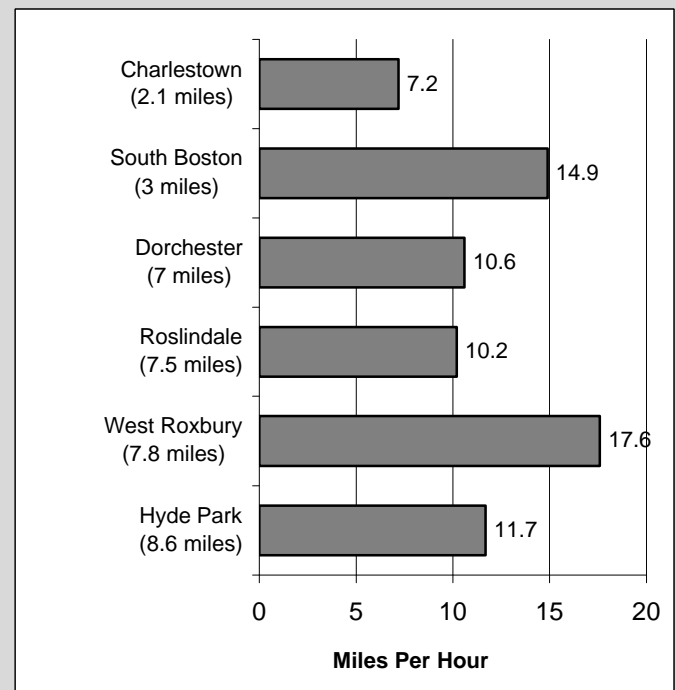
The objective of this initiative is to improve commute times to downtown Boston on six selected corridors. The corridors, consisting of multiple streets, pass through Charlestown, South Boston, Dorchester, Roslindale, Hyde Park and West Roxbury. To establish a base condition, each of the six routes were driven during the AM peak over a five workday period in January 2002.

Each route was broken into segments that began and ended at specific intersections. Segment times were recorded to add up to total trip times. Equally importantly, drivers made observations of "hot spot" areas. These included truck delivery activity, double parking cars, vehicles parked in bus stops, construction impacts and signal problems.

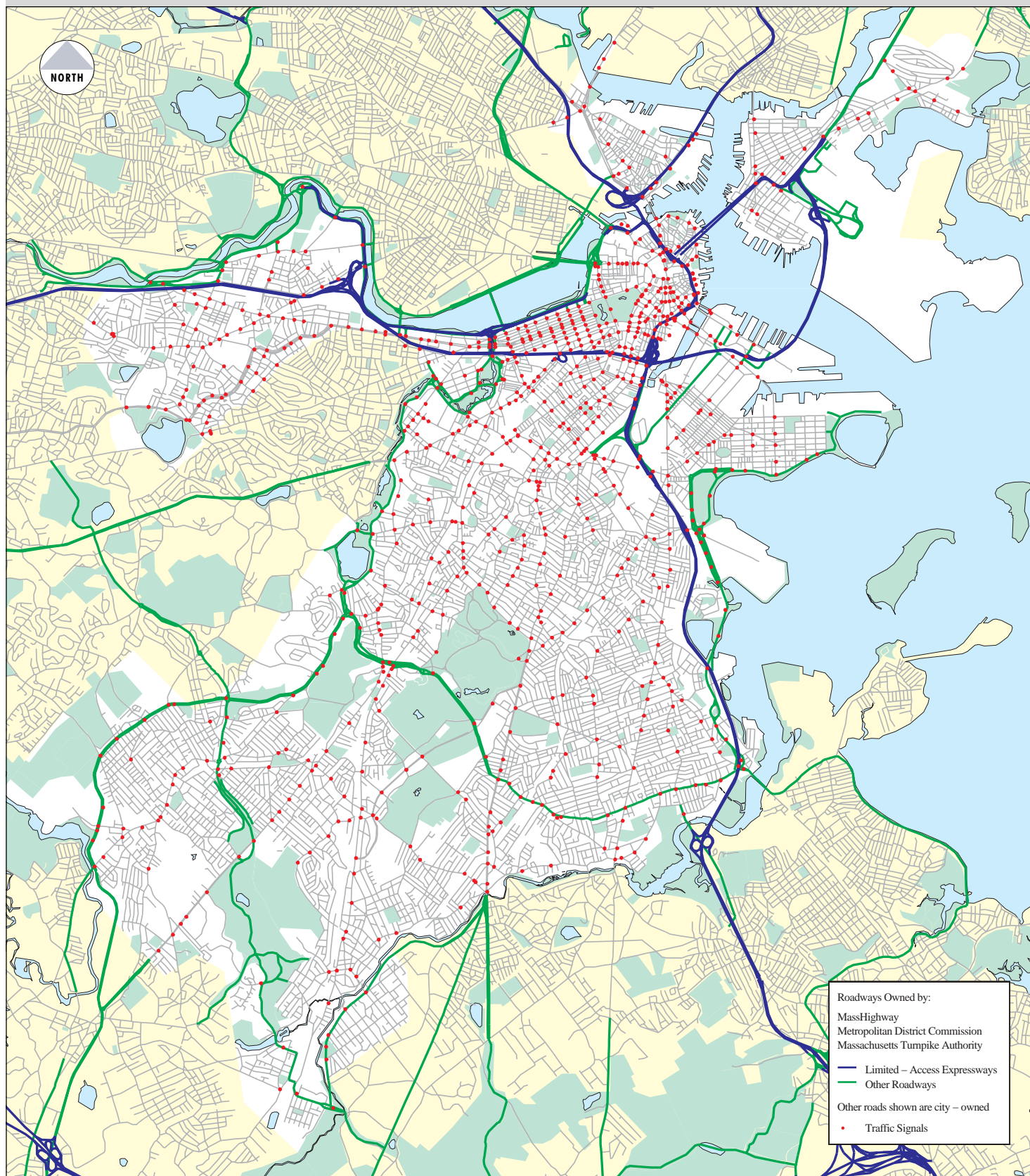
Based on the information obtained from the travel time runs, BTD is implementing specific improvements to identified congestion "hot spots" to increase the efficiency of commute times. The improvements include recommendations for signal coordination, strategic enforcement, parking regulation adjustments and signal enhancements.

BTD will continue to evaluate the success of this program.

Figure 22



Median AM Peak Period Travel Speeds from Boston Neighborhoods to Downtown



Source: BTD/CTPS

Figure 23:
Traffic Signal System

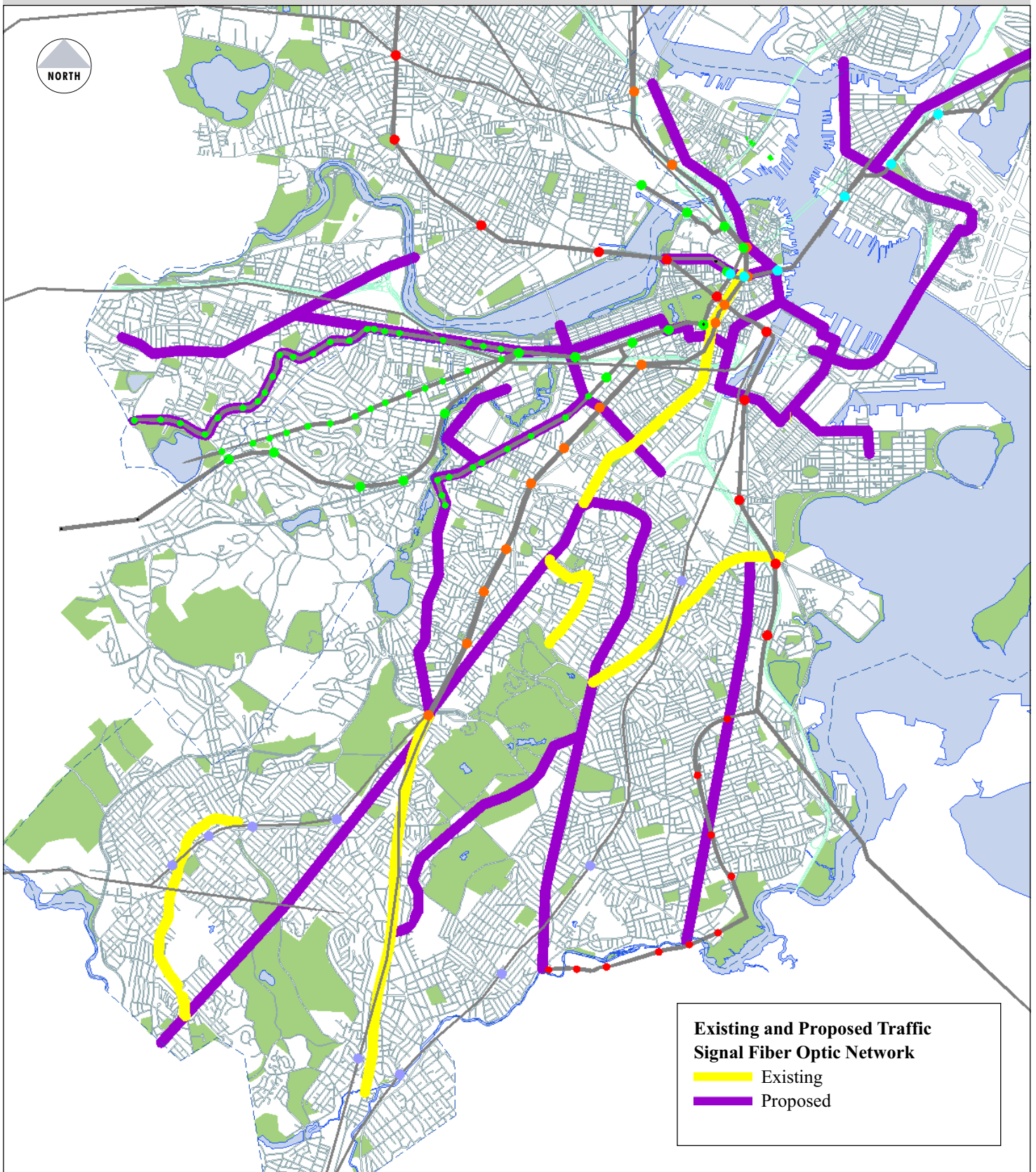


Figure 24:
Existing and Proposed Traffic Signal Fiber Optic Network

Surface Transportation Action Forum



The design approach of the STAF Consensus Plan seeks to manage traffic speeds of traffic exiting the highway system into dense pedestrian areas.



Shared uses could be accommodated on large plazas/ sidewalk areas created by the roadway alignment.

In 1995, Mayor Menino established the Surface Transportation Action Forum (STAF) in response to growing community concerns about the plan to have up to four-lanes wide surface streets to replace the depressed Central Artery. STAF, consisting of the concerned public agencies, environmental advocates lead by Move Massachusetts and WalkBoston, and local residents and businesses, reviewed and refined a new design drawn-up by BTD over one year of extensive public meetings.

The Consensus Plan proposal included a number of innovative approaches to integrate the new roadways into the urban fabric and accommodate the important traffic functions of the roadways while improving the pedestrian environment and accommodating bicyclists. Examples of these measures include:

- Ramp connections to local streets that were more perpendicular and eliminated or greatly reduced street pavement that had been proposed for merging and acceleration/deceleration.
- Extensive use of neckdowns and wide sidewalks with tight turning radii.
- Introduction of “managed” parking lanes that could be used to move traffic during peak commuting hours and park vehicles during off-peak hours.
- Shared use areas that would accommodate pedestrians and vehicular loading activities on large plazas/sidewalk areas created by the alignment of the roadways.

In combination, these and other measures reduced roadway cross-sections and pedestrian crossings and provided a better transition between the highways and local streets. This approach provides blueprint for future projects facing similar issues.

Downtown Circulation

Boston's patterns of historical growth have created an intricate street network in the downtown area. The lack of continuous corridors has resulted in circuitous traffic movements. Ongoing and proposed systemic improvements to the network, as identified in this section, will provide better traffic circulation and fewer vehicle-miles-traveled.

Street in downtown Boston contribute to its vitality since they are essentially pedestrian oriented. Street improvements must enhance the pedestrian environment, accommodate transit vehicles, and be compatible with adjacent land uses.

Downtown North-South Traffic Circulation

The **surface roads over the depressed Central Artery highway** will provide a continuous pair of one-way streets between Kneeland and North Washington Streets, along the waterfront and the North End. These streets will be designed to accommodate all users and include approaches to integrate ramp connections with local streets in a manner that is sensitive to the urban environment of the corridor. (See adjoining box). Traffic functions of the roadways will include: local circulation, access to the new underground highway, and, connections to north-south local corridors that emanate from the downtown including Rutherford Avenue to the north and Albany Street and Frontage Road to the south.

Congress Street/Pearl Street and Merrimac Street provide north-south access from areas north of North Station to South Station and through to the South Boston Waterfront. There are two missing links in this connection:

- Pearl Street northbound from Atlantic Avenue, which will be provided by the Central Artery/Tunnel project.
- The lack of a two-way Merrimac Street, which is being developed by the City of Boston to divert traffic out of the Bulfinch Triangle.

The **Cambridge Street/Tremont Street** corridor provides southbound and limited northbound access because the construction of Downtown Crossing in the 1980s eliminated the use of Washington Street for northbound vehicular traffic parallel to Tremont Street (southbound). Recent City design efforts have focused on traffic management and improved urban design aspects for the corridor.



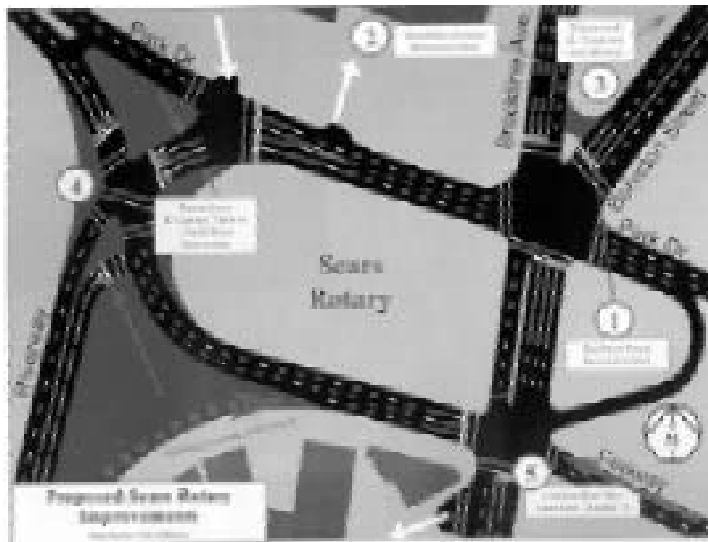
The reconstruction of Merrimac Street is part of a larger effort to create a continuous two-way corridor between the North Station area and the South Boston Waterfront. The two-way Merrimac Street will reduce through traffic in the historic Bulfinch Triangle.



The Cambridge Street/Tremont Street corridor provides access to and through Government Center and the Downtown Crossing retail district.



Congestion on the Boylston Street/Essex Street and Stuart Street/Kneeland Street corridors due to vehicles making turns into and out of cross streets limits east-west vehicular access.



The proposed improvements to the Sears Rotary would simplify and improve control over traffic movements in this complex set of intersections. Additional parkland would be created.

(Source: Vollmer Associates)

Downtown East-West Traffic Circulation

Two corridors jointly provide east-west circulation: **Boylston Street/Essex Street** and **Stuart Street/Kneeland Street**. The corridors have more eastbound than westbound capacity.

- During peak commuting hours, Kneeland Street provides up to 3 eastbound lanes in some sections.
- Boylston Street provides 2 eastbound traffic lanes.
- Westbound capacity is provided by up to 3 travel lanes during peak hours on Kneeland Street.

The traffic capacity of these streets is also affected by turning movements on the two-way section of Kneeland Street, high levels of pedestrian activities and various curbside loading and parking activities. BTD's *Chinatown Transportation Study* identified measures to improve the operation of this street and better integrate the corridors into the urban fabric. Other opportunities would include turn restrictions and the possibility of making part of Kneeland Street one-way.

Sears Rotary

BTD has conducted a series of neighborhood studies outside the downtown to evaluate transportation conditions. The proposed improvements to the Sears Rotary in the Fenway are the most significant improvements that have been identified through these studies. The Sears Rotary is a complex set of intersections organized around a large rotary within a park system. Five major corridors enter the rotary: Brookline Avenue, Boylston Street, Park Drive, the Fenway, and the Riverway. The roadways provide radial connections from the southwest, crosstown connections and are part of the planned Urban Ring transit service. Proposed improvements are described in the BTD's *Fenway Neighborhood Transportation Plan* and are summarized below.

- Reconstruction of Boylston Street and Brookline Avenue within the existing right of way per the cross sections in the BRA's *Land Use and Urban Design Guidelines*.
- Extension of Kilmarnock Street to the north of the rotary to create a new street connection that would relieve traffic volumes entering the rotary.
- Reconstruction of the intersection of the Riverway, the Fenway and Park Drive to eliminate merging conditions and create additional parkland.
- Construction of bus lanes on approaches (Urban Ring).

Action Plan:**Local Arterial Corridors**

Expand the City's Computer Controlled Traffic Signal System

BTD should continue its efforts to upgrade its Traffic Management Center and system of traffic signals. Funding for these improvements will be provided through TIP. However, this funding will not meet all the need to expand the fiber-optic backbone of the system and to provide CCTV cameras and other detection equipment. BTD should continue to pursue state and federal funding and should use the Transportation Access Plan Agreement process to fund improvements from private. Areas of attention include:

- Expanding the BTD's fiber optic network
- Adding cameras to monitor traffic at key intersections
- Integrating activities at the BTD's TMC with other regional centers
- Upgrading equipment

Continue Travel Speed Monitoring Program

BTD's travel speed monitoring program provides a good basis to regularly assess conditions on corridors in the city. BTD should continue this program to expand the database and regularly check the status of implement actions. Proposals that came out of the first round of data collection include signal timing modifications, additional police control and enforcement of double parking. This approach provides basis to target resources with maximum results.

Evaluate Corridor Improvements to Improve East-West Access in the Downtown

Proposed circulation improvements in the downtown will occur as a result of the Central Artery/Tunnel project. However, westbound access will continue to be limited in the future. The lack of a westbound I-90/MassPike off-ramp will further exacerbate conditions. BTD should include local circulation options in future studies of the proposed I-90/Masspike "U-turn Ramp." The potential for modifications to the Stuart Street/Kneeland Street and Boylston Street/Essex Street corridors should be explored.

Implement Proposed Improvements to the Sears Rotary

The City's *Fenway Neighborhood Transportation Plan* identified improvements to the Sears Rotary. The City of Boston will work with the MDC, which owns the rotary and some of the roadways feeding into it, and area residents and institutions to further these recommendations. Opportunities for funding include the Urban Ring project and development proposals in the area.

Continue Efforts to Improve Traffic Flow on Massachusetts Avenue

Massachusetts Avenue links many of Boston's north-south arterials with Storrow and Memorial Drives, the Turnpike and I-93. It also serves residential areas, medical institutions and cultural facilities. Efforts to decongest this corridor continue and include improved real-time video monitoring of key intersections, effective interface with the Artery's Massachusetts Avenue connector and an evaluation of direct access to the Turnpike on-ramp. Currently the ramp can be only accessed from Newbury Street.

Continue Efforts to Improve Traffic Flow on North-South Local Arterial Corridors

Boston's residential neighborhoods in central and southern sections of the city are linked to downtown employment centers by local arterial corridors. Boston residents use these roads to commute, especially when transit and highway access options are limited. Efficient traffic flow on these roads:

- Provides a more reliable commute at safe travel speeds.
- Reduces overflow cut-through traffic on parallel residential streets in the neighborhoods.
- Supports access to the mix of commercial and residential uses located in the corridors.

BTD will continue efforts to improve traffic flow on these north-south corridors through a mix of measures including custom managing the signal system, reducing double parking by changing curbside regulations (see Corridor Improvement Program in *Parking in Boston* report), and targeted enforcement. The following is an initial list of corridors:

- **Tremont Street.** Links Roxbury and points south to Back Bay and downtown. Continuing efforts to reduce double parking and evaluate signal timings.
- **Dorchester Avenue.** Used as an alternative to S.E. Expressway and by Dorchester and Mattapan residents. Needs improved intersection operations (such as creating left-turn lanes) at "hot spot" locations and an evaluation of parking and loading regulations.
- **Blue Hill Avenue.** Fast emerging residential and commercial corridor also used as a commute to Roxbury, the Crosstown area and downtown. Opportunities to coordinate signal system with creation of a transit priority corridor. Potential to improve the connection to Melnea Cass Boulevard and Dudley Square.
- **Columbus Avenue-Washington Street (south of Egleston Square).** Links Hyde Park Avenue from the south with Roxbury, Ruggles and the South End. Needs additional curbside regulations in commercial districts to reduce double parking and intersection modifications at key locations to improve vehicular and pedestrian flow.
- **Columbia Road:** Links American Legion Highway, Franklin Park, and Blue Hill Avenue with Uphams Corner, Dorchester Avenue and Morrissey Boulevard. Needs include addressing bottle necks at major intersections,